

REMARKS

Claims 1-20 are all the claims presently pending in the application. Claims 1, 2, and 4 have been amended to more particularly define the claimed invention. Claims 5-20 have been added to claim additional features of the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not distinguishing the invention over the prior art, narrowing the claims or fore any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amendment claim.

Claim 4 stands rejected under 35 U.S.C. § 112, second paragraph as being allegedly indefinite.

Claims 1-2 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Stockman (U.S. Patent No. 6,537,838). Claims 3-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Stockman.

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as recited in claim 1) is directed to a method of producing p-type Group III nitride compound semiconductor. The method includes forming a first Group III nitride compound semiconductor layer doped with p-type impurities, forming a second Group III nitride compound semiconductor layer doped with substantially at least one of no impurities, n-type impurities, and n-type and p-type impurities, such that an amount of impurities in said second Group III nitride compound semiconductor layer is less than an amount of impurities in said first Group III nitride compound semiconductor layer; and reducing resistance after or during said forming said second Group III nitride compound semiconductor layer.

Unlike conventional methods which form a p-type Group III nitride compound semiconductor having a high electrical resistivity (e.g. higher than GaP or GaAs) (Application at page 3, lines 3-7), the claimed method forms (e.g., on the first Group III nitride compound semiconductor layer doped with p-type impurities) a second Group III

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nitride compound semiconductor layer such that an amount of impurities in said second Group III nitride compound semiconductor layer is less than an amount of impurities in said first Group III nitride compound semiconductor layer. This is an important feature of the claimed invention because the difference between impurity concentrations may permit p-type impurities to be moved from the first to the second Group III nitride compound semiconductor layer (Application at page 6, lines 15-23).

II. THE 35 USC 112, FIRST PARAGRAPH REJECTION

The Examiner alleges that claim 4 is indefinite. Applicant would point out, however, that claim 4 has been amended to address the Examiner's concerns.

Therefore, Applicant would argue that claim 4 is adequately enabled. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. THE STOCKMAN REFERENCE

The Examiner alleges that Stockman teaches the invention of claims 1-2 and makes obvious the invention of claims 3-4. Applicant would argue, however, that there are elements of the claimed invention that are not taught or suggested by the cited reference.

Stockman discloses a method of forming a semiconductor structure. In the Stockman method, an n-type layer 36 is formed on a p-type layer 34, and the n-type layer is patterned and etched (Stockman at col. 4, lines 38-52). The device is then annealed to drive hydrogen out of the p-type layer 34 through the areas where the n-type layer was etched.

However, Applicant would submit that Stockman does not teach or suggest "*forming a second Group III nitride compound semiconductor layer ... such that an amount of impurities in said second Group III nitride compound semiconductor layer is less than an amount of impurities in said first Group III nitride compound semiconductor layer*". As noted above, this feature is important because the difference between impurity concentrations may permit p-type impurities to be moved from the first to the second Group III nitride compound semiconductor layer (Application at page 6, lines 15-23).

Clearly, these features are not taught or suggested by Stockman. Indeed, the Examiner asserts only that it would have been obvious that "the p-type impurities would inherently diffused (sic) from first Group III nitride layer into the second Group III nitride layer in a smaller amount". That is, the Examiner argues that after reducing the resistivity

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(e.g., performing a heat treatment) the amount of impurities in the second Group III nitride layer would be less than in the first Group III nitride layer.

However, the claim recites “*forming a second Group III nitride compound semiconductor layer ... **such that** an amount of impurities in said second Group III nitride compound semiconductor layer is less than an amount of impurities in said first Group III nitride compound semiconductor layer*”. That is, in an exemplary aspect of the claimed invention, the condition that the impurities in the second Group III nitride layer are less than the impurities in the first Group III nitride layer may refer to a condition resulting from the forming of the second Group III nitride layer, not necessarily a result of reducing the resistivity.

Moreover, in the claimed invention, a resistivity of the first Group III nitride layer be reduced by promoting a diffusion of p-type impurities into the second Group III nitride layer. Thus, in an exemplary aspect of the claimed invention, it is important that the amount of impurities in the second Group III nitride layer is less than an amount of impurities in the first Group III nitride compound semiconductor layer (e.g., to allow for this diffusion).

However, Stockman does not have the same aim as the claimed invention. Indeed, Stockman, in contrast to the claimed invention, aims to drive hydrogen out of the p-type layer **34 through the areas where the n-type layer was etched**. Thus, whether the second Group III nitride layer has less impurities than the first Group III nitride layer is not likely important in the Stockman method.

Therefore, Applicant would submit that Stockman does not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

IV. FORMAL MATTERS AND CONCLUSION

Applicant notes that the Examiner has not acknowledged the receipt of the two priority documents (P2002-272554 and P2003-279732) that were submitted on September 22, 2003 at the time of filing the present Application. The Examiner is respectfully requested to acknowledge receipt of these documents with the next Official Communication.

In view of the foregoing, Applicant submits that claims 1-20, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in

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condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully submitted,



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